SERVICE MANUAL

REPAIR MANUAL

for

MAMIYA C220 Professional

(m FC)

MAMIYA CAMERA CO., LTD.
TOKYO JAPAN

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I. DISASSEMBLING AND REASSEMBLING

This chapter deals with troubles which may be encountered when disassembling and reassembling the camera while relying on the exploded views.

1. Mirror

(1) Disassembly. Refer to exploded view, page 2 .

(2) Reassembly

Insert the mirror FC4051 into the brackets of the camera body mFC4011 while tilted away from above the camera body (in the arrow direction), holding the mirror tight against the mirror spring aFC4053. Then adjust the mirror angle at 45 degrees against the film plane of the camera body, by turning the mirror angle adjusting screw PB1.7x2.5B. Apply D.B. Bond to the brackets and the mirror angle adjusting screw of the camera body to secure them.

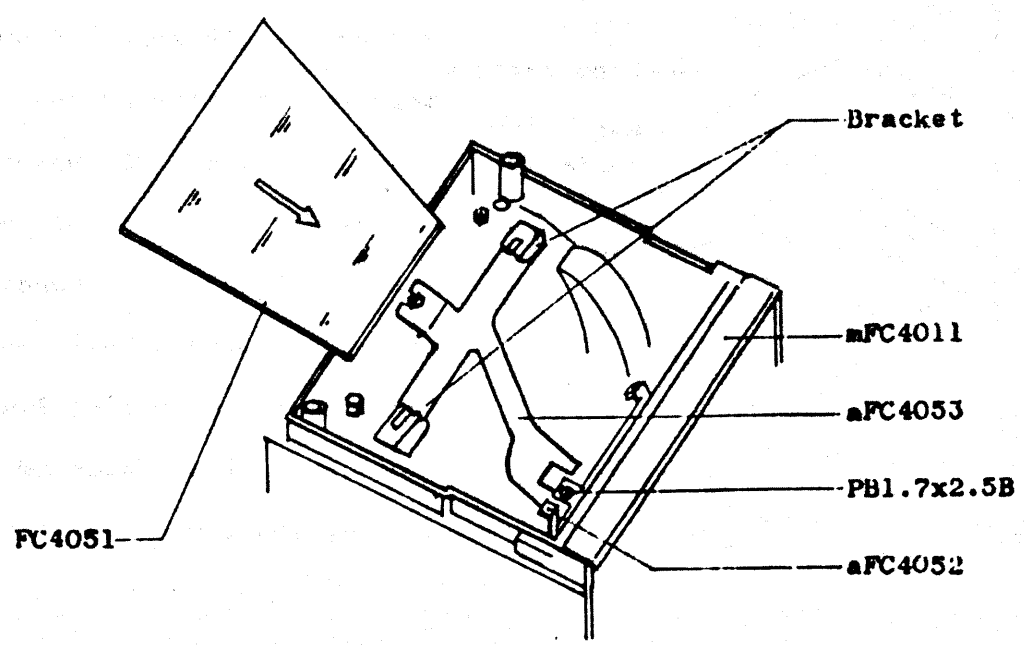


Fig. 1

3

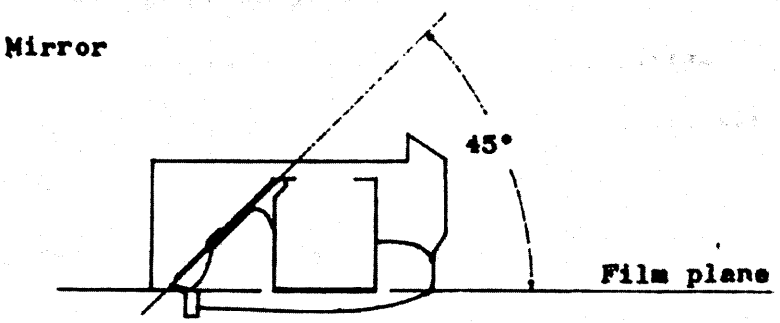
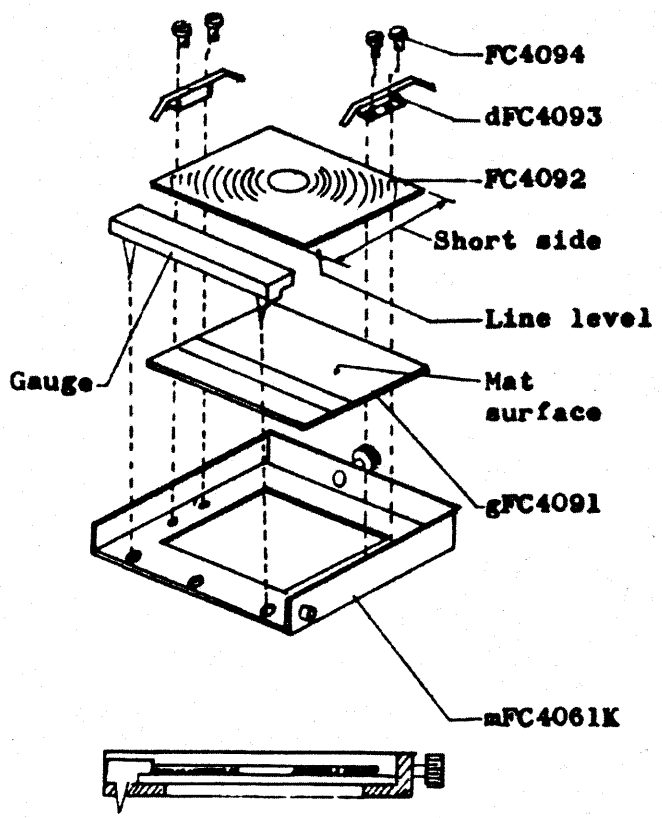


Fig. 2

2. Focusing Screen Frame

(1) Disassembly. Refer to exploded view, page 6 .

(2) Reassembly



Reassemble all parts in the order shown in the exploded view on the left. When all parts are assembled as shown in the bottom, secure it with screws FC4094 together with the ground glass spring plate dF4093, using the exclusive gauge for this purpose. After tightening the screws, apply D.B. Bond to all four corners of the fresnel lens and the ground glass focusing screen, and cement in place.

Fig. 3

3. Side Panel

3.1 Right panel mFC4611

(1) Disassembly

Take off the disk mFC4117 by inserting a sharp-edged instrument into it, then loosen the two screws 4B1.7x2 and take off the knob mFC4116. Peel off the leatherette mFC4716 from the right panel mFC4611; then, by unscrewing five screws PD2x3B and screw PD2x5, the right panel can be removed.

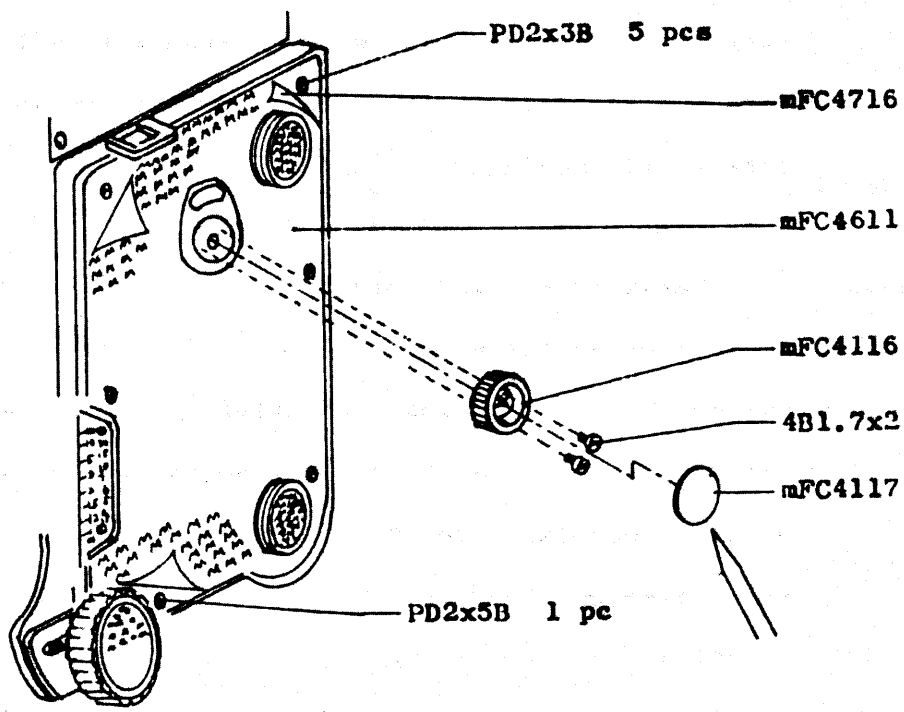


Fig. 4

(2) Reassembly

Reassemble all parts in the reverse order of disassembly. Secure the two screws 4B1.7x2 by tightening them and applying D.B. Bond. Cement the disk and leatherette with Pliobond.

3.2 Left panel mFC4621

(1) Disassembly

Remove the screw 3Ds2x3Cr, and take off the knob cover mFC4319. Take off the spring pFC5115, open the back cover, put the universal pin face tightener into the two holes of the ratchet wheel pFC5111 while inserting the spanner T-mFC-1 into the nut gFC4368, and turn the universal pin face tightener counterclockwise. With this action,the ratchet wheel can be taken out, and the film winding knob mFC4321K2 removed. Then peel off the leatherette mFC4717 from the left panel mFC4621K2, take out the five screws PD2x3 and screw PD2x5, and remove the left panel mFC4621K2.

(2) Reassembly

Position the left panel so that the window by the knob mFC4645 shows the mark "SINGLE" in it, let the groove of the button mFC4683 meet the projection mFC4682K2, attach the left panel, and secure with screws. Subsequently, assemble all parts in reverse order to disassembly. Cement the leatherette with Pliobond.

(3) Checking

(3).1 Move the button mFC4683 back and forth to verify change over of the indication from 120 to 220 (and vice versa), confirming that change over can be observed from the window.

(3).2 Turn the knob mFC4645, confirming that the shutter operates correctly according to the "SINGLE" and "MULTI" marks in the window.

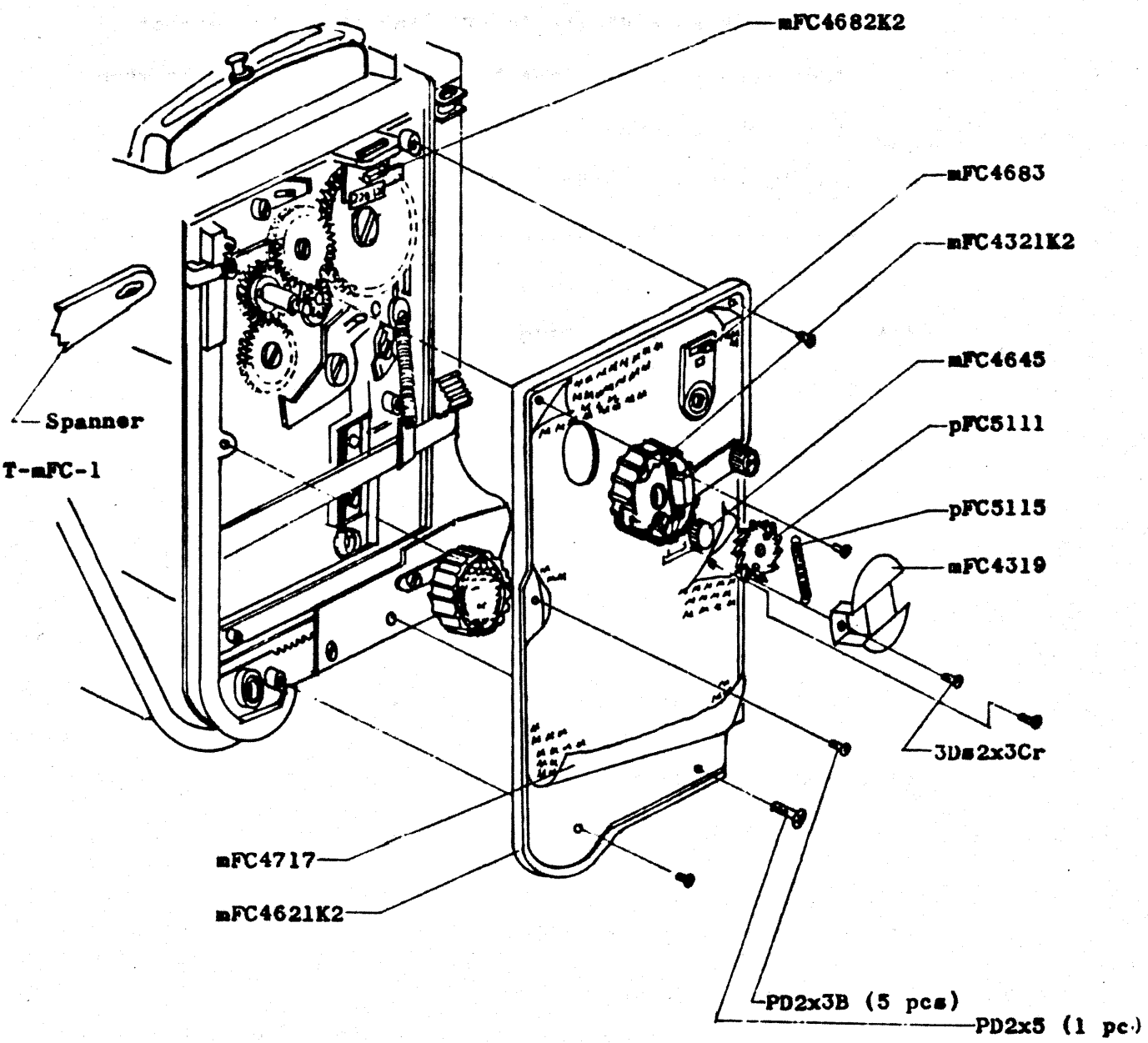

mFC4682K2
mFC4683
mFC4321K2
mFC4645
pFC5111
pFC5115
mFC4319
Spanner
T-mFC-1
3Ds2x3Cr
mFC4717
mFC4621K2
PD2x3B (5 pcs)
PD2x5 (1 pc.)

Fig. 5

7

(3).3 Turn the film winding knob to verify that the spool nut moves accordingly, confirming that the ratchet functions properly (should make a clicking noise when the knob is turned in reverse).

4. Film Advance, Exposure Counter

(1) Order of disassembly. (After removing the left panel)

Refer to exploded view, page 3 .

(1).1 Shoulder screw dWP1794

(1).2 Gear mFC4372

(1).3 Shoulder screw mFC4689

(1).4 Shoulder screw mFC4686

(1).5 Lever mFC4685

(1).6 Shoulder screw mFC4684

(1).7 Slider assembly mFC4682K2

(1).8 Screw 2.5Bal.4x2.5

(1).9 Exposure counter mFC4352

The picture below shows the condition after all nine parts listed above are removed.

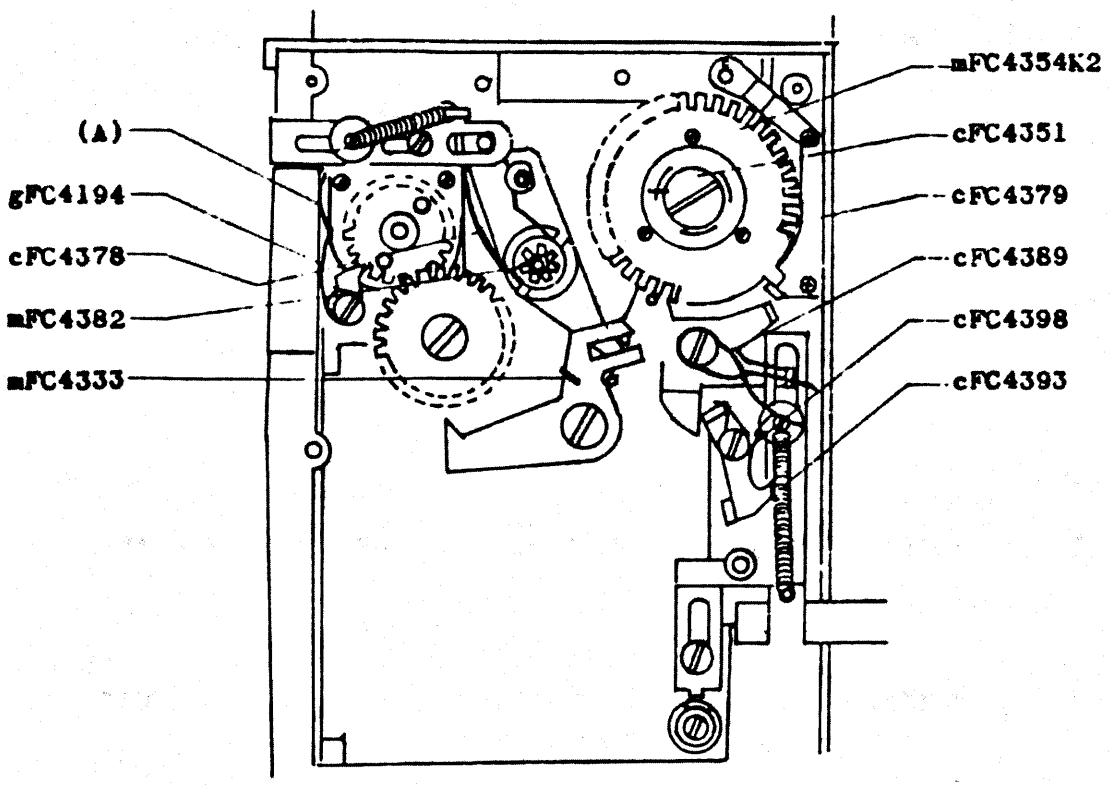


Fig. 6

Refer to Fig. 6 for hanging each spring.

Since the spring for pawl gFC4194 may slip off, (A) is cemented with D.B. Bond.

(1).10 Since the shaft friction wheel mFC4382 is bonded with HI-LOCK, together with the friction milled wheel hFC4381 and the gear hFC4383, the shaft friction wheel hFC4382 cannot be disassembled. When the wheel must be removed, nip hFC4381 with a nipper, break the shaft friction wheel, and pull out the shaft friction wheel hFC4382 together with the gear hFC4383.

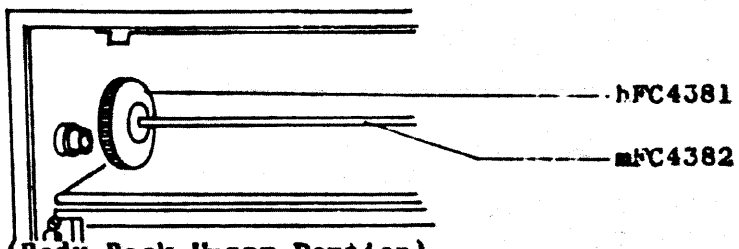


Fig. 7 (Body Back Upper Portion)

(1).11 The dividing disk assembly mFC4354K2 can be taken off when the exposure counter shaft cFC4351 is loosened. Do not loosen cFC4379. (See Fig. 6)

(2) Assembly

(2).1 Assembling the dividing disk assembly mFC4354K2 and the spring mFC4359

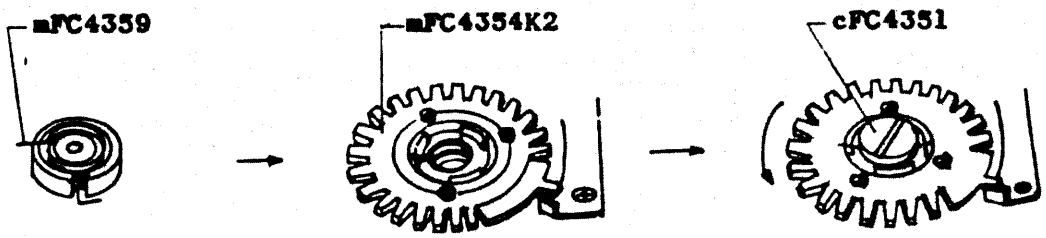
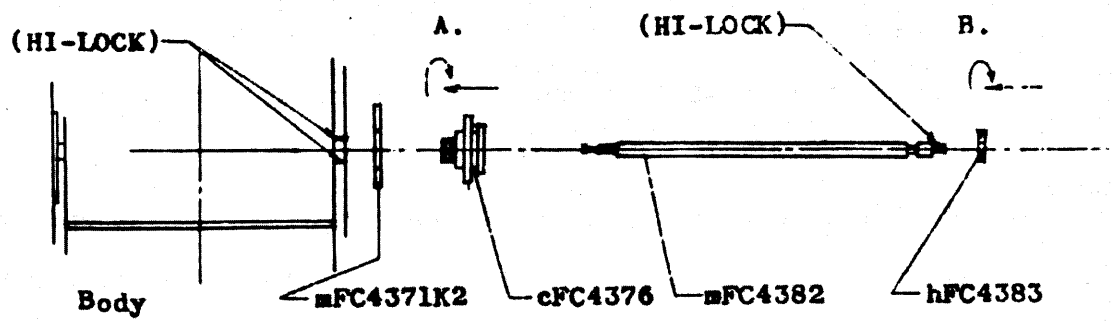


Fig. 8

Insert the spring mFC4359 into the groove of the camera body as shown above. While keeping the dividing disk assembly above the groove, pull out the edge of the spring with a pincette from the center hole. Insert the spring into the groove of the dividing disk as shown in the picture (above center). After applying bonding agent to the tip of the exposure counter shaft cFC4351, rotate the dividing disk counterclockwise once to position the whole assembly as shown in the picture (above right), then secure it tightly with screws.

(2).2 Assembly of the shaft friction wheel mFC4382. (See exploded views, pages 3 and 4)



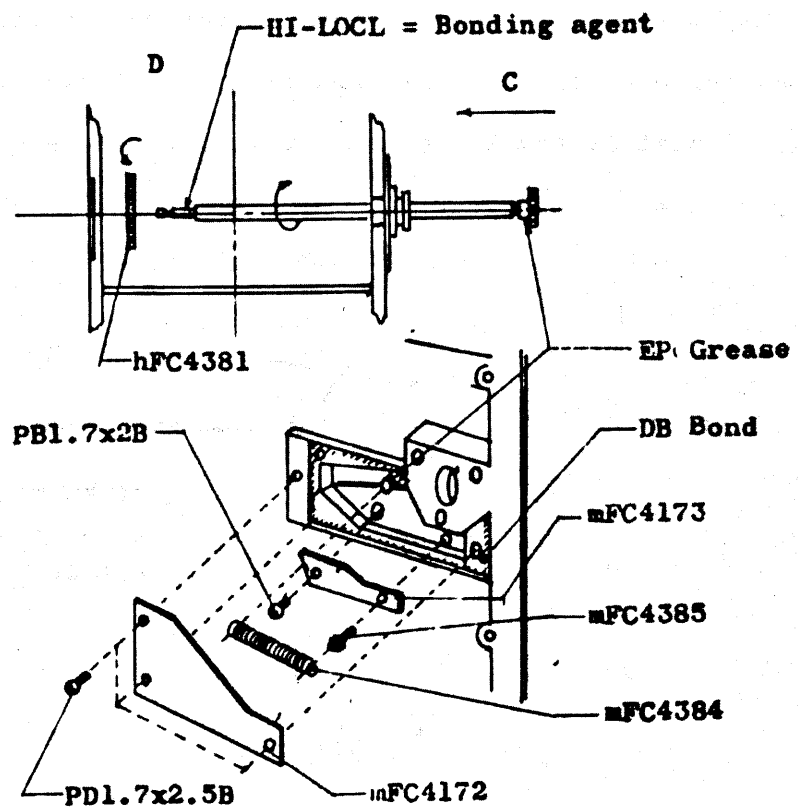


Fig. 9

11

Apply HI-LOCK bonding agent to the places pointed out in the above pictures, and assemble the shaft friction wheel in the order of A, B, C, and D. Use a pin-faced screwdriver to tighten the flanged screw cFC4376, and when the friction milled wheel hFC4381 is assembled, use pincers for the friction wheel shaft, making sure that both of them are sufficiently secure. After securing mFC4173 with PB1.7 x 2B and the screw mFC4385, hook the spring mFC4384 on both the tip of the shaft friction wheel and the head of the screw mFC4385, apply EP grease, apply some D.B.Bond to places indicated in the above pictures to prevent light leaks, and secure the hollow-cover mFC4172 tightly with screws.

(3) Checking

(3).1 Confirm that the dividing disk mFC4354K2 returns to its original position when the disk is turned counterclockwise with a finger (until it touches or almost touches the stopper) and the finger is suddenly removed.

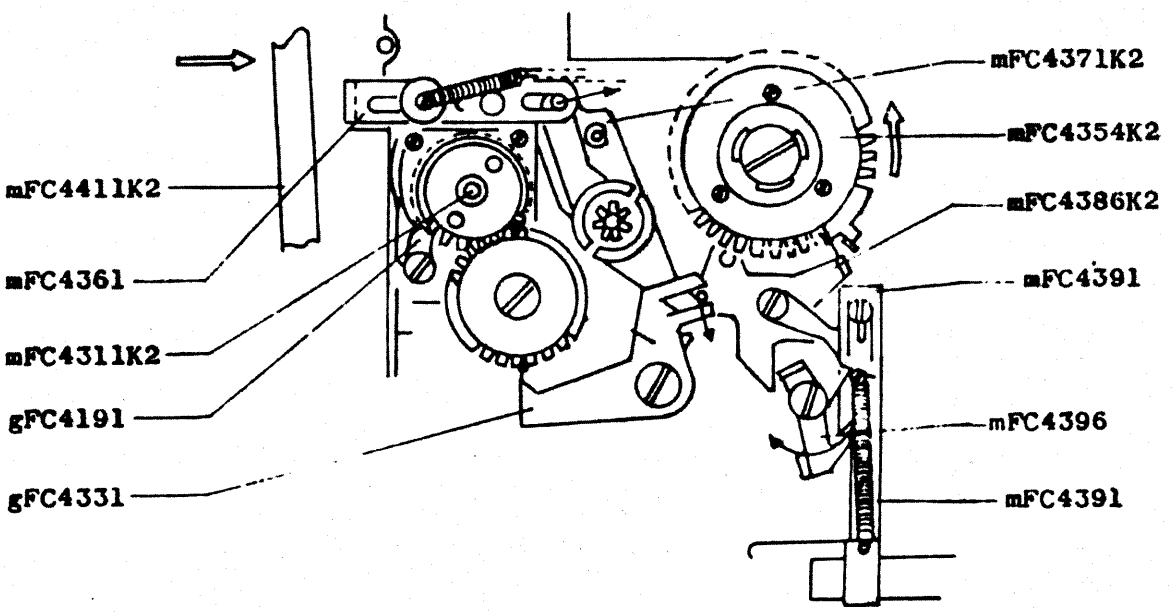


Fig. 10

(3).2 Are all the screws tight?

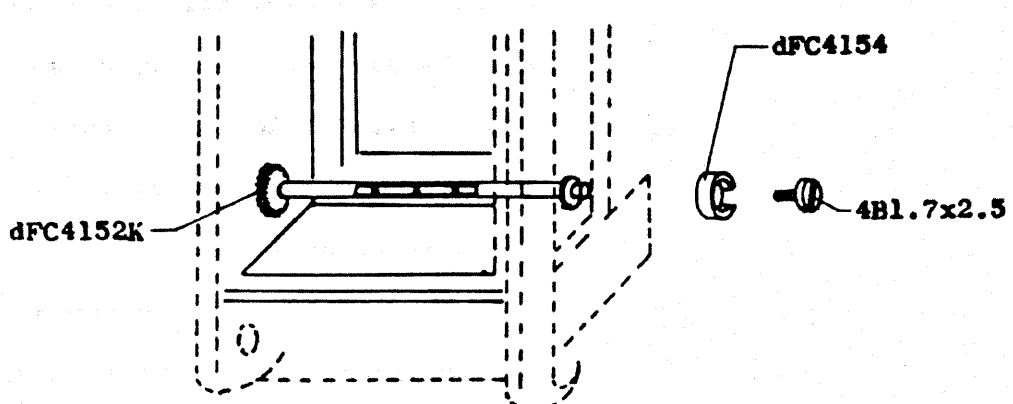
(3).3 Does the pawl gFC4191 operate well when the film winding gear assembly mFC4311K2 is turned counterclockwise?

(3).4 Do the lever counter reset mFC4361, the lever counter reset assembly mFC4371K2, the pawl gFC4331, the wind stop lever assembly mFC4386K2, and the latch mFC4396 all operate properly when the back cover mFC4411K2 is closed (when it is pressed in the arrow direction shown)? Does the bent place of the wind stop lever assembly mFC4386K2 meet the cut-off point of the dividing disk when the dividing disk mFC4354K2 is turned counterclockwise? At the same time; does the tip of the pawl gFC4331 jump into the gear, and will the tip of the latch mFC4396 slip out from the lever counter reset assembly mFC4391, and does it go back to its original position (see Fig. 10) when the back cover is opened?

5. Light-tight Flap, Lever Assembly (Refer to exploded view, pages 3 and 4.)

(1) Disassembly

Remove the light-tight flap FC4155K2 from the back of the camera body.



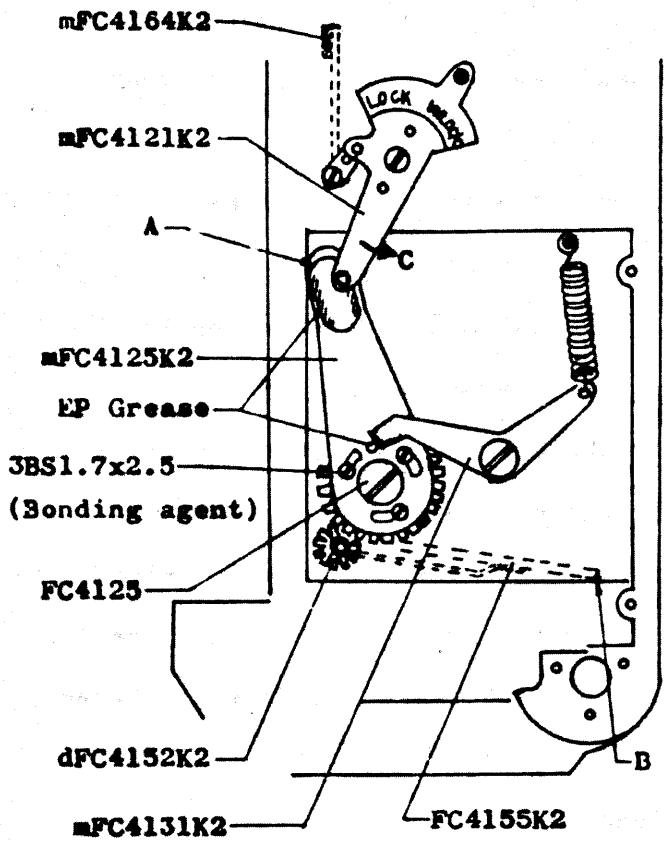


Fig. 11

By loosening the screw 4B1.7x2.5 shown above and pulling out the gear shaft assembly dFC4152K from the opposite side, the light-tight flap can be removed.

(2) Assembly and adjustment

The related position of the dFC4152K and the cut slit of the safety collar dFC4154 is shown in Fig. 11, above. Apply bonding agent to the tip of the screw 4B1.7x25, and secure the safety collar to the dFC4152K with the screw.

Then attach the light-tight flap assembly and secure it with a screw. Be careful of the related position of the flap assembly and the lever assembly FC4152K2 (see Fig. 11, below). Keep the play at "A" from 0 to 0.5mm. Let "B" touch the wall of the camera body by adjusting with a screw 3Bs1.7x2.5. Apply some bonding agent to the screw. At this stage, the relative

position of the red warning signal mFC4164K2 must be as shown in the picture.

(3) Checking

(3).1. When the condition is like the picture at the bottom of Fig. 11, the cut slit of the safety collar dFC4154K on the other side faces upward.

(3).2. Confirm that the light-tight flap closes for certain when the lock lever mFC4121K2 is turned in the direction of the arrow mark (C). Check this by pushing it from the camera front with your finger.

6. Front Panel Rack Plate (Refer to exploded view, page 5)

(1) Disassembly

Remove the ten screws aFC4567 on the front. Since D.B.Bond is attached between the small bellows assembly aFC4564K and the front panel mFC4511 to prevent leaks of straying light, add lacquer thinner or methyl ethyl keton between them when they cannot be seperated. Then remove the stopper aFC4653 and pull out the front panel from the camera body.

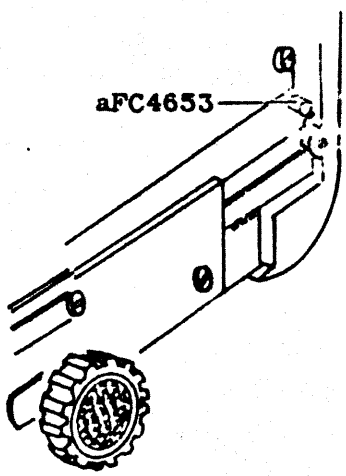


Fig. 12

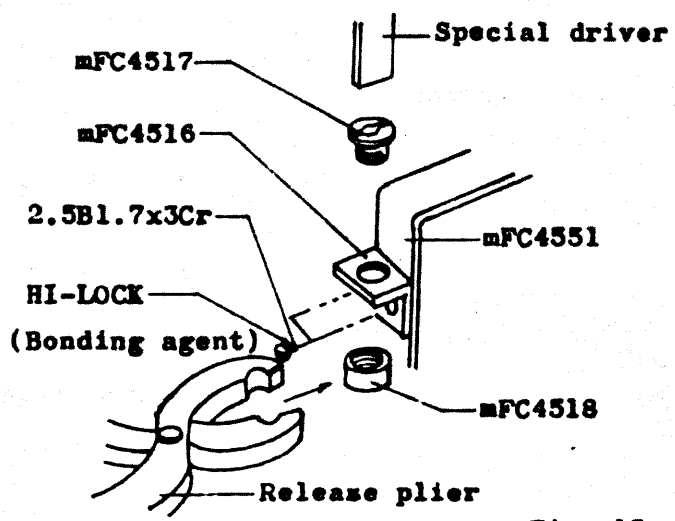


Fig. 13

Since the bracket mFC4516 is fixed with the screw 2.5B1.7x3Cr, to which HI-LOCK is applied, make holes on the top two screws with a.1.4 ϕ drill before disassembling. For other information on disassembling this front panel and the (rack) plate, refer to Fig. 13 or to the exploded view on page 5.

(2) Assembly

After disassembling the focusing knobs on both sides of the front panel, as shown in Fig. 13, insert them from the front, and continue assembling in the opposite manner of disassembly. After screwing in the nut aFC4662, add Pliobond. Reapply the leatherette cFC4721 with Pliobond.

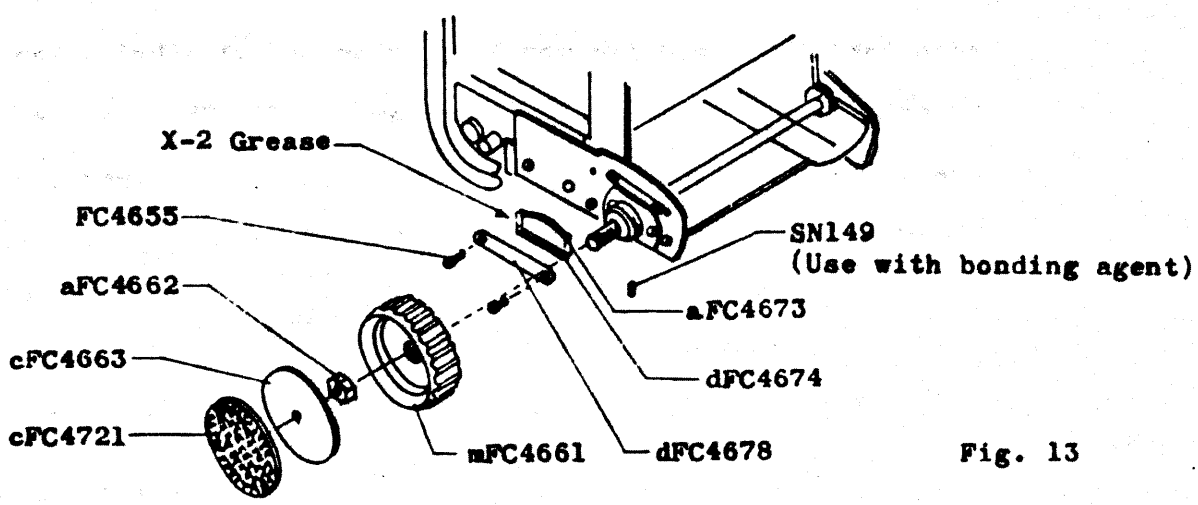


Fig. 13

(2).1. Exchanging the rack plate and the guide plate. (Refer to exploded views, pages 3, 4, and 5.)

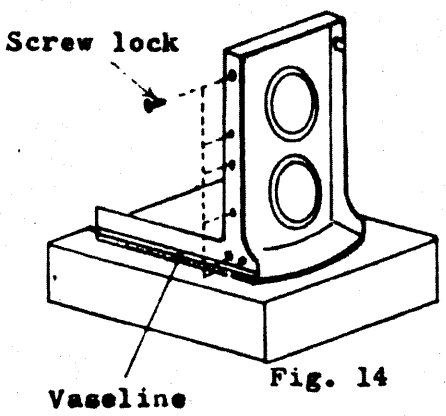


Fig. 14

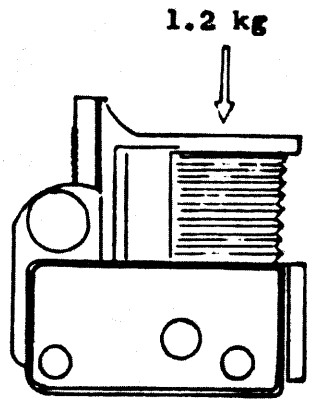


Fig. 15

First, combine the rack plates mFC4651 and mFC4652 and the guide plates mFC4671 and mFC4672, rubbing them against each other and adding some vaseline. Use bonding agent to assemble the frame mFC4551 and the rack plates with the screw. Place the guide plate on the base as shown in Fig. 14 and determine the plane angle of the rack plate assembly. After assembling the guide plate onto the camera body, adjust the torque of the focusing knobs by the screws SN149 (see Fig. 13).

When a weight of less than 1.2kg is placed on the center of the front panel, the front panel should not start moving by itself. (Fig. 15)

II. ADJUSTMENTS

1. Adjusting the Focus (Refer to exploded view, page 2)

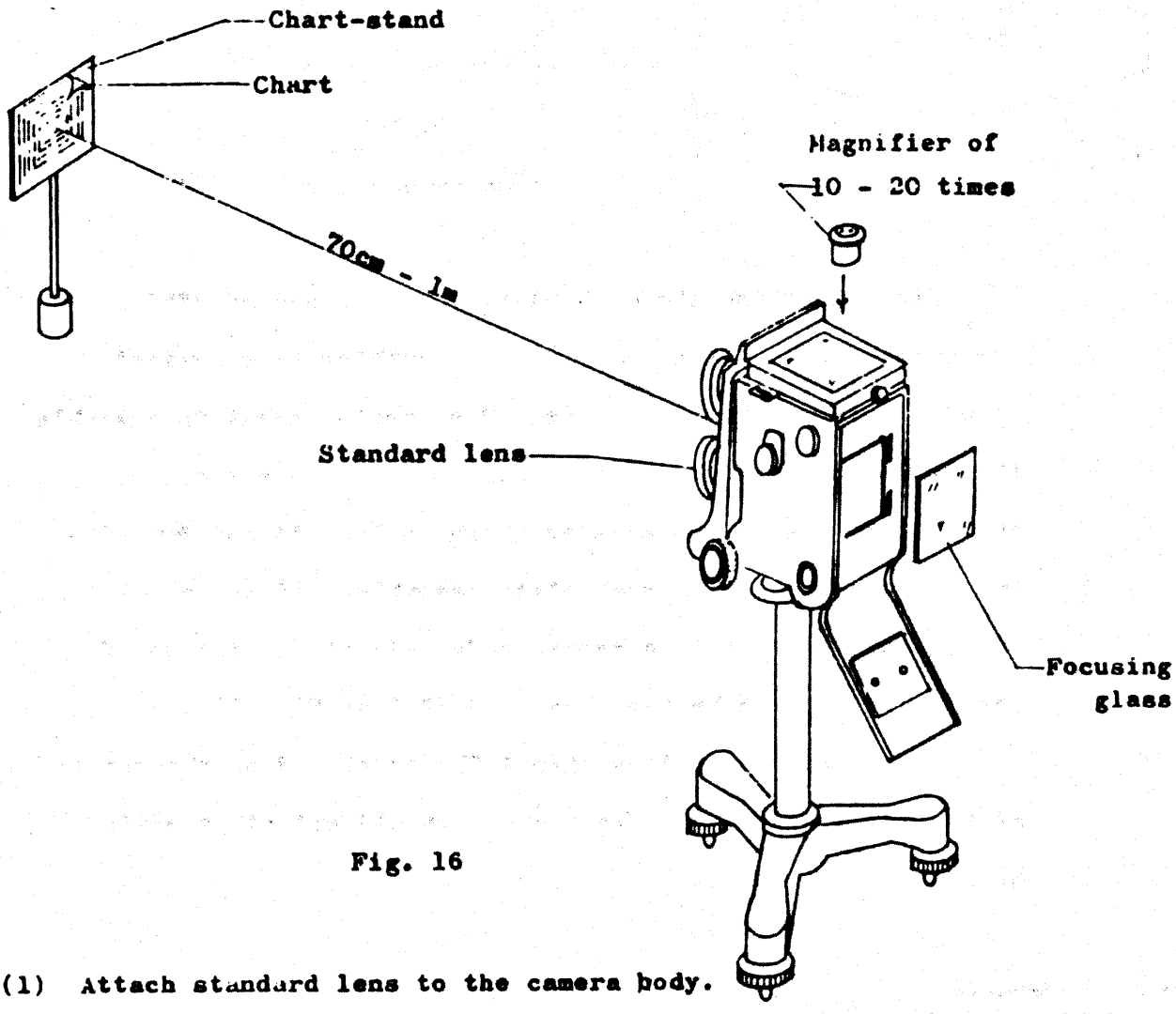


Fig. 16

(1) Attach standard lens to the camera body.

(Standard lens: one whose lens back of the taking lens and the viewing lens is well adjusted)

(2) Set the camera as shown in Fig. 16, and focus the plane chart on the ground glass focusing screen. The chart can be a stereo chart.

(3) Then, without moving the focusing knob, attach a focusing screen on the film rail of the camera body, making sure that

the chart is also well focused on the film plane.

(4) When the chart is not focused on the focusing screen at the film plane, move the focusing knob until an image clearly focused on the focusing screen at the film plane is seen, then add the washer FC4067 and the washer 4W2x0.1 until a clearly focused image is visible on the ground glass focusing screen. (See Fig. 16.A)

Tighten the screws aFC4066.

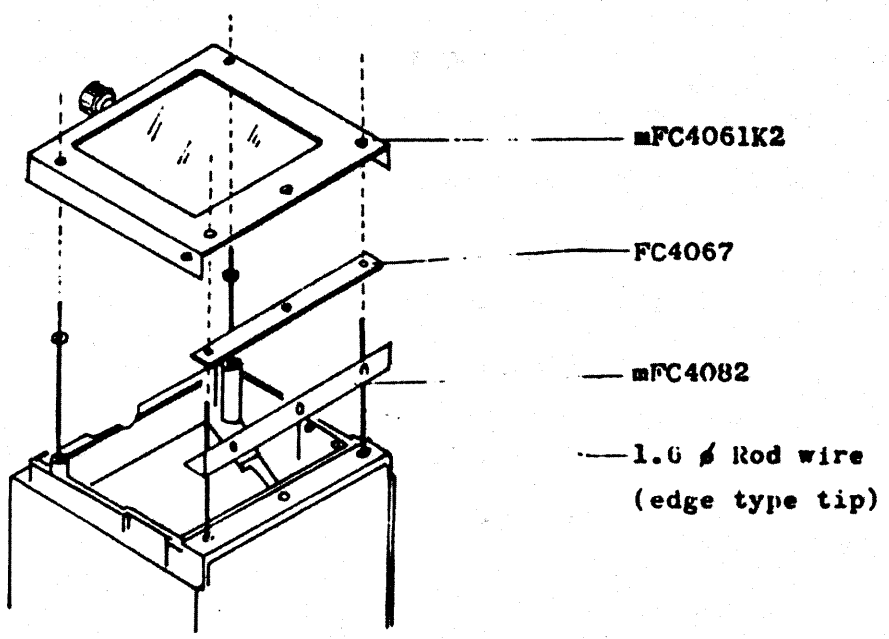


Fig. 16.A

NOTE: Before adding washers for adjustment, prepare four 1.6 ϕ rod wires. Insert the wires into the camera body as shown in Fig. 16.A, then add the washers. With this method, the ground glass focusing screen can be assembled without dropping the washers.

III. TROUBLE-SHOOTING...CAUSES AND REPAIR METHODS

1. Focusing

Cause

(1) Focusing adjustment is imperfect.

Corrective action:

Refer to II.1.

Cause

(2) Lens assembly is not parallel against the film plane. (Includes erroneous attachment of lens to the body.)

This will not happen if the camera is used under normal conditions.

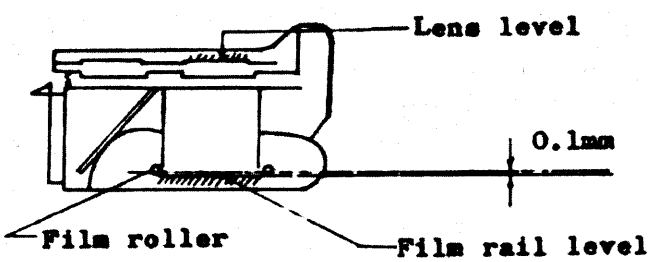


Fig. 17

Corrective action:

(2).1. Check for erroneous play between camera body and the rack plate mechanism.

- o Check the play of each screw.
- o Check for breakage or dropped off brake spring aFC4673. (Refer to exploded view, page 4.)

(2).2. Check if the film roller is projecting over the film plane. The film roller must be about 0.1mm lower than the film plane. If the film roller is bent, repair the roller or replace it with another one.

(2).3. Check if the clamp bracket mFC4531 is completely sustaining the lens. (Refer to exploded view, page 5) Also check if the lens base plate is curved. In the latter case, repair the curve or replace the parts.

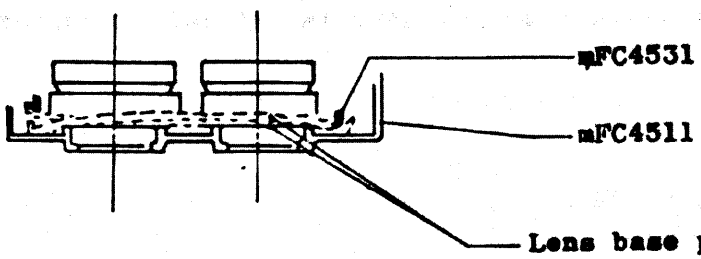


Fig. 18

Cause

(3) Lens itself is wrong.

Corrective action:

Check if the front lens assembly is loosened, check the back of the lens, and check the resolution power of the lens.

2. Light Leaks

Cause

(1) What about shading between front panel and small bellows? (Refer to exploded view, page 5.)

Corrective action:

Insert a light-tight strip aFC4724 between the two and add D.B.Bond to it (when the camera is disassembled for cleaning).

Cause

(2) Is the light-tight strip positioned on the back cover as required, or does the back cover close completely?

Corrective action:

Check and take proper action.

Cause

(3) The light-tight flap FC4155K2 is not well adjusted.

Corrective action:

Refer to I.5.

Cause

(4) When small bellows has a hole, or when some parts are not in place, etc.

3. Operation of Shutter Release Button

(Refer to Fig. 6 of I.4)

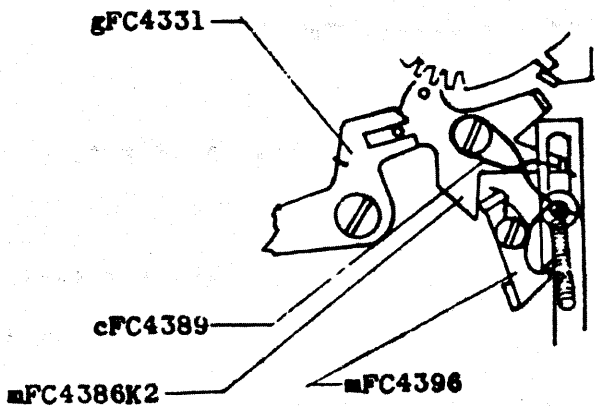


Fig. 19

Cause

(1) The spring cFC4389 is off (in this case, the wind stop does not work).

Or the spring is not strong enough to force the wind stop lever to jump into the dividing disk completely.

Corrective action:

Reset or replace the spring.

Cause

(2) Parts gFC4331, mFC4386K2, or mFC4396 do not function properly.

Corrective action:

Check and take proper action.

Cause

(3) The wind stop lever is off the mFC4396, and the latch does not work.

Corrective action:

Repair or replace the parts.

4. Advancing and/or Resetting Exposure Counter

Cause

(1) The spring mFC4384 is off. (See Fig. 9 of I.4, (2).2)

Corrective action:

Open the back cover and push the shaft friction wheel; if the exposure counter resets, no special action is necessary. If the exposure counter does not reset, take action by referring to I.4, (2).2.

Cause

(2) Exposure counter in back cover opening does not reset.

Corrective action:

Remove the left panel mFC4621K2, and repair the counter reset lever mFC4361. At the same time, adjust play of the back cover so that the lever functions properly. If the counter reset lever does not return when the back cover is opened, the exposure counter will not be reset.

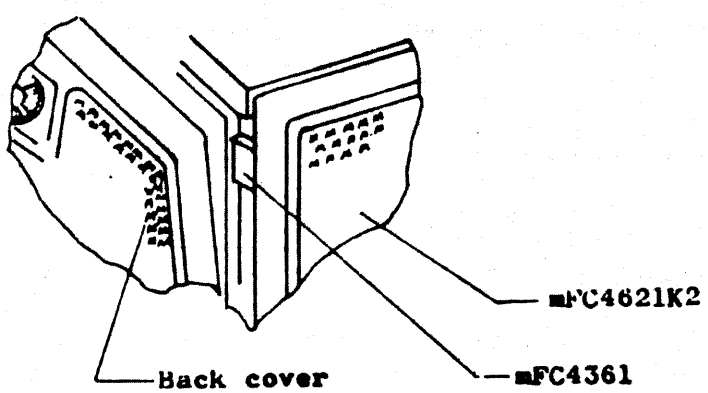


Fig. 20

Cause

(3) The spring mFC4359 is off. (Fig. 8 of I.4, (2).1)

Corrective action:

If the exposure counter does not reset when the back cover is opened, refer to I.4, (2).1, taking proper action.

5. Wind Stop Does Not Function

Cause

(1) Same as III.3.(1). (2)

Corrective action:

Check and take proper action.

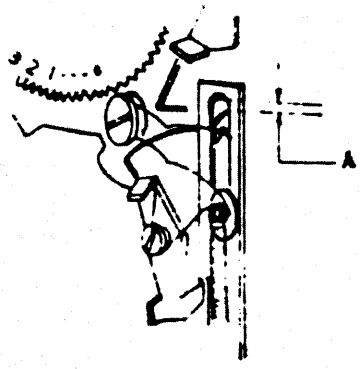


Fig. 21

Cause

(2) Same as III.4.(2)

Corrective action:

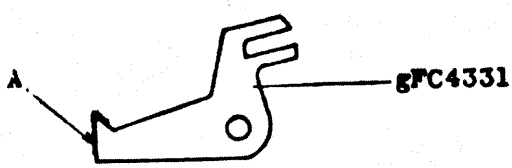
Check and take proper action.

Cause

(3) The pawl gFC4331 does not meet the gear properly. (Refer to Fig. 10)

Corrective action:

Sharpen the edge of "A" with a file.



6. Wind Stop Released Before Shutter

Since this model is so designed, this cannot be repaired. However, if adjustment is desired it can be done by adjusting the space at "A".